

streams which flowed between the side of the glacier and the bounding slope of the valley" (Rep. Can. Survey, 1898, p. 61).

There are no existing glaciers in the Klondike region, and while the former presence of small local valley-glaciers has been recognised, all the observers are agreed as to the absence of any trace of widespread glaciation. This probably implies that, as in Siberia, the climate throughout the Glacial Period was dry, and that then, as now, heavy precipitation was confined to the vicinity of the coast.

To sum up our impressions of this book, Prof. Heilprin may be complimented on having given us a vivid picture of transient conditions in the Klondike; but, from a physical standpoint, his work can scarcely be taken as a solid contribution to our knowledge of the district.

The numerous excellent reproductions of photographs with which the book is illustrated are for the most part well adapted to show the general character of the scenery and conditions, though now and again a picture is introduced for effect rather than for instruction. The deep yellow binding with its pictured dog-trains, reminiscent of the "yellow press," is not particularly happy.

G. W. L.

A NEW TEXT-BOOK ON CHEMISTRY.

Inorganic Chemistry for Advanced Students. By Sir Henry E. Roscoe, F.R.S., and Arthur Harden, Ph.D. Pp. 432. (London: Macmillan and Co., Ltd., 1899.)

THIS book is intended to supplement "Chemistry for Beginners," which was published about six years ago by Sir Henry Roscoe, with the assistance of Mr. J. Lunt. It is not a complete treatise on the elements of inorganic chemistry, but part of a complete treatise. It is intended for students who have already gained a little knowledge of the subject, and those who would use it must first learn something about oxygen, hydrogen, chlorine, carbon, and their simpler compounds, and about many other matters, either from "Chemistry for Beginners" or from some other suitable elementary work.

We suppose that a small text-book is put into the hands of most beginners when they reach the stage at which they need such a book, and that presently, when they are older and more advanced, this small book is changed for one of the larger treatises. Now, at this latter stage a certain amount of confusion and some loss of time are very apt to occur owing to the overlapping of the contents of most elementary and advanced works on chemistry, and to the fact that the majority of young students are not able to skip with discretion. It is evident that this confusion and loss of time might be avoided by the use of two books, such as those which have now been provided by Sir Henry Roscoe and his colleagues, Dr. Harden and Mr. Lunt; and we believe that those who have had much experience in teaching chemistry under school conditions will at once recognise the merits of their method of dealing with the subject in two volumes, one quite elementary, one more advanced, and each the complement of the other.

The present volume, like its predecessor, follows in the main the lines laid down so successfully a generation ago

in the familiar "Roscoe's Chemistry." That is to say, the book is intended for students who want to learn the fundamental principles of chemistry, and something about its methods and its data, rather than for those who desire to use the subject as part of a system of mental gymnastics. But though the new book follows lines which have so long been made familiar to us by the previous work of its eminent senior author, it differs from that earlier work in several respects, notably in its somewhat more limited scope, for organic chemistry finds no place between its covers, in the greater attention given to chemical theory, and in the fact that a great number of experiments for the student are described in the text.

The subject-matter of the volume is divided into thirty-nine lessons, the elements treated of being grouped in such a manner that from the beginning the student may be said to be preparing the way for his subsequent study of the periodic system of classification. The chapters on chemical theory are dispersed among the rest. This arrangement may, perhaps, seem open to the objection that the student's reading in certain subjects may be somewhat broken up; but the authors have adopted it, as they tell us in their preface, with the object of relieving him of the tedious task of working without a break through a long series of metals and their compounds. The parts of chemical theory chiefly discussed in these lessons are atomic and molecular weights, equivalents, specific and atomic heats, crystals and isomorphism, valency, the constitution of hydroxides and oxyacids, dissociation, thermochemistry, electrochemistry, the periodic law and spectrum analysis. There are questions to be worked out, and numerous summaries. We are not quite convinced that so many of these latter make for sound learning. Should not every student prepare a good many of his own abstracts after he has read a few chapters and compared them with some summaries provided as examples? This, however, is a small matter, as it is obvious that the existence of summaries in the text need not prevent any student from constructing his own abstracts during his reading. We feel sure that the new book will be welcomed by those who are familiar with its predecessor, and by many others, and we wish it and its companion volume all success.

W. A. S.

OUR BOOK SHELF.

Elements of Natural Philosophy. By Alfred Earl, M.A. Pp. viii + 320. (London: Edward Arnold, 1899.)

MR. EARL is already well-known as the author of the admirable "Practical Lessons in Physical Measurement," and one naturally examines a new book of his with great expectations. The preface states that the present volume is "intended as a handbook for the laboratory," and "has been written for the use of beginners." The book does not, in our opinion, exactly fulfil these conditions; yet it may still prove of use, though rather to teachers than taught. A laboratory manual should give clear, precise instructions as to what the student has to do—guidance of a sufficiently explicit nature for the pupil to work from without unduly bothering the teacher, who, very often, has too large a number working at the same time for purely individual instruction. Yet, in dealing with the measurement of simple quantities, for example, Mr. Earl gives some nineteen pages of general descrip-

tion, with little or no practical work, contenting himself by adding thirty-eight exercises at the end of the chapter. These exercises leave little to be desired, but a beginner will not always be clear about the several steps by which he is to arrive at the required result. The divisions adopted by the author lead to some very miscellaneous chapters; thus Chapter vi., entitled "Changes Belong to Several Classes," runs to thirty-two pages, and includes a brief treatment of inertia, the electrophorus, voltaic cells, the thermopile, gravitation, expansion, the Gulf Stream, Trade winds and several other subjects. Chapters viii. and ix. take the pupil "along the well-beaten track of chemical rudiments," and were written by Mr. F. Collins. Too much is attempted in this section, and things are often taken for granted of which a beginner has no knowledge whatever. Thus, on p. 185, the modes of chemical action are partly explained by chemical equations, though the only guidance towards understanding them which has been given to the pupil is the table of elements, with their symbols and atomic weights, on p. 181. The value of the book would have been much increased by using simpler language, and adding more illustrations.

Elementary Practical Chemistry. By A. J. Cooper, B.A., B.Sc. Pp. viii + 86. (London: Whittaker and Co., 1899.)

SOME idea of the profound changes which have occurred in the teaching of elementary chemistry during the last decade can be obtained from the large number of books recently published, all of which claim to supply a long-felt want. Mr. Cooper's book covers familiar ground in a more or less familiar way. He starts with a brief account of the metric system (which, however, is too short to be of much use), describes the balance, how to determine relative densities, and to measure liquids and fit up apparatus. No wonder the student often asks why these subjects must be studied both in the chemical and physical laboratories. But like many another recent writer of an elementary course of chemistry, Mr. Cooper rightly avoids the thaumaturgic art of test-tubing, and it is in this connection we are able to perceive an advance has been made in the way of studying science. Though the "Heuristic" method, of which so much is heard nowadays, is not suitable throughout a complete course of chemistry, it is unfortunate that so many statements occur like "note the white powder of metastannic acid that is formed"; "the name of the gas which you have just prepared is nitrous oxide"—which have no significance to a beginner.

The Teaching of Geography in Switzerland and North Italy. By Joan Berenice Reynolds. Pp. xii + 112. (London: C. J. Clay and Sons, 1899.)

NO more hopeful indication of the growing desire on the part of British teachers to improve the methods of instruction in our schools could be desired than this little volume provides. It is particularly gratifying to find that the old insular prejudice is giving place to an intelligent study of foreign educational systems, and that it is at last becoming recognised there is much to be learnt from Continental pedagogic authorities. Miss Reynolds was, in 1897, awarded the Travelling Studentship for Teachers in connection with the University of Wales, and her report, which she presented in 1898 to the Court of this newest of our Universities, demonstrates conclusively that she made the best use of her opportunities. Equipped with the information provided by a wide course of reading in the geographical literature of the countries she intended to visit, Miss Reynolds was able to intelligently note all the features of Swiss and Italian teaching practice which would prove of assistance to our own teachers, and she has here set them down in a clear and interesting manner. Her book should be read by every teacher of geography.

NO. 1571, VOL. 61]

Liverpool Marine Biology Committee's Memoirs. I. Ascidia. By Prof. W. A. Herdman, D.Sc., F.R.S. Pp. v + 52; with five plates. (Liverpool: T. Dobb and Co., 1899.)

THIS is the first of a series of memoirs which is being prepared by the Liverpool Marine Biology Committee under the editorship of Prof. Herdman, to supply a want which "has been constantly felt of a series of detailed descriptions of the structure of certain common typical animals and plants, chosen as representatives of their groups, and dealt with by specialists." The expense of preparing the plates in illustration of the first few memoirs is being met by a donation of Mr. F. H. Gossage, of Woolton. Prof. Herdman has omitted detailed references to original memoirs, the object of his manual being more to provide students of marine biology with a concise and accurate description of the appearance, structure, and life-history of the Ascidian than to publish a bibliography.

In an appendix a statement is given of the classification and characters of the Tunicata, in order to indicate the position of *Ascidia* as a type of the group and its relations to the other British Ascidians.

The Story of the Wanderings of Atoms, especially those of Carbon. By M. M. Pattison Muir, M.A. Pp. 192. (London: George Newnes, Ltd., 1899.)

AN attractive title does not by itself make an attractive book. Assuming that "The Library of Useful Stories" is intended for the general reader, we are afraid that this short account of the compounds of carbon is largely beyond his comprehension. There is an abundance of information, but the repeated references to Mr. Muir's "Story of the Chemical Elements" will tantalise the man who expects to get knowledge and recreation by the same process. A sound knowledge of organic chemistry is only obtained by experimental methods based upon a thorough grounding in the elements of chemistry, and this end is most satisfactorily obtained by studying simple inorganic substances first. The author has adopted a style more suited for the classroom than the platform of the popular lecturer, and the ordinary person who takes up this little volume will, after reading very few pages, find himself completely out of his depth.

General Index, by Robert Newstead, F.E.S., Curator of the Grosvenor Museum, Chester, to Annual Reports of Observations of Injurious Insects, 1877-1898. By Eleanor A. Ormerod, F.R. Met. Soc., &c. With Preface by the author. Pp. xii + 58. (Simpkin, 1899.)

THE twenty-two annual volumes of Miss Ormerod's Reports are known to all students of agricultural entomology, and their usefulness as indispensable works of reference will be largely increased by the present compendium, which includes, in addition to the general index, separate indices of plants, animals and unclassified "hosts." Miss Ormerod's preface contains remarks on the origin and method of the reports, notices of a few of the more important insects which have been dealt with, and miscellaneous observations. It is worthy of special note that she considers all birds which are even moderately insectivorous as beneficial to such an extent as to overbalance any mischief they may do in other ways, unless they are present in overwhelming numbers; but she especially excludes the house sparrow, which she denounces as a national evil.

W. F. K.

A Hand-List of the Genera and Species of Birds. By R. Bowdler Sharpe, LL.D. Vol. I. Pp. xxi + 303. (London: Printed by order of the Trustees of the British Museum, 1899.)

THE system of classification adopted in this new "hand-list" is that proposed by Dr. Bowdler Sharpe in 1891. The book is founded upon the "Catalogue of the Birds